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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2004-19755; Directorate Identifier 2004-NM-23-AD; Amendment 39-15003; AD 2007-07-03]**

**RIN 2120-AA64**

#### **Airworthiness Directives; Boeing Model 747 Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), Department of Transportation (DOT).

**ACTION:** Final rule.

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**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for certain Boeing Model 747 airplanes. This AD requires repetitive tests to detect hot air leaking from the trim air diffuser ducts or sidewall riser duct assemblies (collectively referred to in this AD as “TADDs”), related investigative actions, and corrective actions if necessary. This AD also provides an optional terminating action for the repetitive tests. This AD results from reports of sealant deteriorating on the outside of the center wing fuel tank and analysis that sealant may deteriorate inside the tank due to excess heat from leaking TADDs. We are issuing this AD to prevent leakage of fuel or fuel vapors into areas where ignition sources may be present, which could result in a fire or explosion.

**DATES:** This AD becomes effective May 2, 2007.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in the AD as of May 2, 2007.

**ADDRESSES:** You may examine the AD docket on the Internet at <http://dms.dot.gov> or in person at the Docket Management Facility, U.S. Department of Transportation, 400 Seventh Street, SW., Nassif Building, Room PL-401, Washington, DC.

Contact Boeing Commercial Airplanes, P.O. Box 3707, Seattle, Washington 98124-2207, for service information identified in this AD.

**FOR FURTHER INFORMATION CONTACT:** Dan Kinney, Aerospace Engineer, Propulsion Branch, ANM-140S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98057-3356; telephone (425) 917-6499; fax (425) 917-6590.

## **SUPPLEMENTARY INFORMATION:**

### **Examining the Docket**

You may examine the AD docket on the Internet at <http://dms.dot.gov> or in person at the Docket Management Facility office between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The Docket Management Facility office (telephone (800) 647-5227) is located on the plaza level of the Nassif Building at the street address stated in the ADDRESSES section.

### **Discussion**

The FAA issued a supplemental notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to include an AD that would apply to certain Boeing Model 747 airplanes. That supplemental NPRM was published in the Federal Register on September 26, 2006 (71 FR 56064). That supplemental NPRM proposed to require repetitive tests to detect hot air leaking from the trim air diffuser ducts or sidewall riser duct assemblies (collectively referred to in the AD as “TADDs”), related investigative actions, and corrective actions if necessary. That supplemental NPRM also provided an optional terminating action for the repetitive tests.

### **Comments**

We provided the public the opportunity to participate in the development of this AD. We have considered the comments received.

### **Supportive Comment**

Boeing has reviewed the supplemental NPRM and concurs with the content.

### **Request To Delay Corrective Actions**

Lufthansa German Airlines asks that, if any hot air leak is found during any test required by paragraph (f) of the supplemental NPRM, we give relief for the corrective actions specified in paragraphs (g) and (h) of the supplemental NPRM. It suggests we do this by allowing deactivation of the zone trim air modulation valve of the affected TADDs for at least ten days. Lufthansa states that this would allow a delay in performing the inspection and corrective actions until after that extension ends; this delay would permit the operator to better plan the actions required if any hot air leak is found during the repetitive tests required by paragraph (f).

We do not agree with the commenter. The zone trim air modulation valves are located downstream of the potential leakage area; therefore, deactivating them would not prevent hot air leakage from the TADDs. We have made no change to the AD in this regard.

### **Clarification of Test Requirements Specified in Paragraph (f)**

Lufthansa asks for clarification of the test requirements specified in paragraph (f) of the supplemental NPRM. Lufthansa states that the repetitive tests specified in paragraph (f) are to be done in accordance with Boeing Service Bulletin 747-21A2418, Revision 4, dated November 17, 2005. Lufthansa adds that Note 2 of the supplemental NPRM refers to Chapters 21-61-20 and 21-61-21 of the Boeing 747 Airplane Maintenance Manual as an additional source of service information for the test and inspections of the TADDs. Lufthansa notes that those chapters describe the temperature measurement procedure for the repetitive hot air leak inspection and specify temperature measurements of all TADDs after thirty seconds, one minute, two minutes, and then every two minutes, for a duration of twenty minutes. Lufthansa states that it is not clear whether the temperature

measurements must be performed simultaneously on all ducts, or sequentially with one or more ducts at a time; however, the description suggests performing the measurements simultaneously on all ducts. Lufthansa adds that performing the temperature measurements sequentially with one or more ducts would ease the measurement procedure. Lufthansa notes that it does not understand why the temperature has to be measured on all TADDs every two minutes for a duration of twenty minutes, mainly because the airplane maintenance manual for Model 747-200 Combi airplanes has only baseline and 10-minute measurements and there is no requirement for additional measurements. Lufthansa asks that the intervals be reduced to 1- and 10-minute intervals, with the possibility of performing each measurement sequentially.

We acknowledge and agree with the commenter's concern and provide clarification. The temperature measurement procedure identified by the commenter does specify performing the measurements simultaneously on all ducts. If the procedure were done sequentially, before making each measurement, the initial conditions of the airplane would have to be re-established, and the time required for that would be prohibitive. Measuring the temperatures frequently allows detection of the highest achieved temperature, given that the temperature may not increase steadily. In addition, Model 747-200 Combi airplane configurations are different; therefore, different procedures are used for those airplanes and those procedures cannot be used for the other airplane models specified in this AD. However, according to the provisions of paragraph (l) of this AD, we may approve requests for another method which accomplishes the intent of the maintenance manual tasks if the request includes data which prove that method would provide an acceptable level of safety. We have made no change to the AD in this regard.

## Conclusion

We have carefully reviewed the available data, including the comments received, and determined that air safety and the public interest require adopting the AD as proposed in the supplemental NPRM.

## Costs of Compliance

There are about 1,081 airplanes of the affected design in the worldwide fleet. The following table provides the estimated costs for U.S. operators to comply with this AD.

**Estimated Costs**

Action	Work hours	Average labor rate per hour	Cost per airplane	Number of U.S.-registered airplanes	Fleet cost
Hot air leak test	3	\$80	\$240, per test cycle	216	\$51,840, per test cycle
General visual inspection	5	\$80	\$400, per inspection cycle	216	\$86,400, per inspection cycle

## Authority for This Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, "General requirements." Under that section, Congress charges the FAA with

promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

## **Regulatory Findings**

We have determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a “significant regulatory action” under Executive Order 12866;
- (2) Is not a “significant rule” under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

We prepared a regulatory evaluation of the estimated costs to comply with this AD and placed it in the AD docket. See the ADDRESSES section for a location to examine the regulatory evaluation.

## **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

## **Adoption of the Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

### **PART 39—AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

**Authority:** 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

2. The Federal Aviation Administration (FAA) amends § 39.13 by adding the following new airworthiness directive (AD):



**2007-07-03 Boeing:** Amendment 39-15003. Docket No. FAA-2004-19755; Directorate Identifier 2004-NM-23-AD.

**Effective Date**

- (a) This AD becomes effective May 2, 2007.

**Affected ADs**

- (b) None.

**Applicability**

(c) This AD applies to Boeing Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747-400, 747-400D, 747-400F, 747SR, and 747SP series airplanes; certificated in any category; line numbers 1 through 1316 inclusive.

**Unsafe Condition**

(d) This AD results from reports of sealant deteriorating on the outside of the center wing fuel tank and analysis that sealant may deteriorate inside the tank due to excess heat from leaking trim air diffuser ducts or sidewall riser duct assemblies (collectively referred to in this AD as "TADDs"). We are issuing this AD to prevent leakage of fuel or fuel vapors into areas where ignition sources may be present, which could result in a fire or explosion.

**Compliance**

(e) You are responsible for having the actions required by this AD performed within the compliance times specified, unless the actions have already been done.

**Repetitive Tests and Inspections**

(f) Do the actions in Table 1 of this AD at the times specified in Table 1 of this AD, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 747-21A2418, Revision 4, dated November 17, 2005. When the compliance times for a hot air leak test and a general visual inspection coincide, the hot air leak test is not required at that time, but is required within 1,200 flight hours (i.e., one repeat interval) after the general visual inspection.

**Table 1 – Compliance Times**

<b>Do This Action –</b>	<b>Initially at the Later of –</b>	<b>Then Repeat Within This Interval Until Paragraph (j) Is Done –</b>
(1) Repetitive test to detect hot air leaking from TADDs	Prior to the accumulation of 21,200 total flight hours, or within 1,200 flight hours after the effective date of this AD	1,200 flight hours
(2) General visual inspection for damage or discrepancies of the TADDs	Prior to the accumulation of 32,000 total flight hours, or within 12,000 flight hours after the effective date of this AD, except as provided by paragraph (g) of this AD	12,000 flight hours

Note 1: For the purposes of this AD, a general visual inspection is: “A visual examination of an interior or exterior area, installation, or assembly to detect obvious damage, failure, or irregularity. This level of inspection is made from within touching distance unless otherwise specified. A mirror may be necessary to ensure visual access to all surfaces in the inspection area. This level of inspection is made under normally available lighting conditions such as daylight, hangar lighting, flashlight, or droplight and may require removal or opening of access panels or doors. Stands, ladders, or platforms may be required to gain proximity to the area being checked.”

Note 2: Boeing Service Bulletin 747-21A2418, Revision 4, refers to Chapters 21-61-20 and 21-61-21 of the Boeing 747 Airplane Maintenance Manual as an additional source for service information for the test and inspections of the TADDs.

(g) If any hot air leak is found during any test required by paragraph (f) of this AD: Before further flight, do the general visual inspection for damage or discrepancies of the TADDs, in accordance with the Accomplishment Instructions of Boeing Service Bulletin 747-21A2418, Revision 4, dated November 17, 2005.

### **Corrective Actions**

(h) If any damage or discrepancy is found during any general visual inspection for damage required by paragraph (f) or (g) of this AD: Do the actions in paragraphs (h)(1), (h)(2), (h)(3), and (h)(4) of this AD, as applicable. Do all of these actions in accordance with the Accomplishment Instructions of Boeing Service Bulletin 747-21A2418, Revision 4, dated November 17, 2005.

(1) Before further flight: Perform a general visual inspection for damage of the primary and secondary fuel barriers of the center wing tank; structure adjacent to the discrepant TADD; and cables, cable pulleys, and raised cable seals in the over-wing area. If no damage is found on the side of the airplane where the damaged or discrepant TADD is found, inspecting the other side of the airplane is not required.

(2) Before further flight: Repair all damage or discrepancies found.

(3) Before further flight: Replace any damaged TADD with a new TADD having the same part number or a new or serviceable, improved TADD having a part number listed in the “New TADD Part Number” or “New Sidewall Riser Duct Assy Part Number” column, as applicable, of the tables in Section 2.C.2. of the service bulletin.

(4) Repeat the test and inspection required by paragraph (f) of this AD at the times specified in Table 1 of this AD, except as provided by paragraphs (i) and (j) of this AD.

(i) For any original-material TADD that is replaced with a new TADD having the same part number as the TADD being replaced: Within 21,200 flight hours after the TADD is replaced, do the test to detect hot air leaking from the replaced TADD, and within 32,000 flight hours after the TADD is replaced, do the general visual inspection for damage, as specified in paragraph (f) of this AD. Thereafter, repeat the test and inspection at the repetitive intervals specified in Table 1 of this AD, except when the times for a hot air leak test and a general visual inspection coincide, the leak test is not required.

### **Optional Terminating Action**

(j) Replacing existing TADDs with new or serviceable, improved TADDs terminates repetitive test and inspection requirements as specified in paragraphs (j)(1), (j)(2), and (j)(3) of this AD. New or serviceable, improved TADDs are those having a part number listed in the “New TADD Part Number” or “New Sidewall Riser Duct Assy Part Number” column, as applicable, of the tables in Section 2.C.2. of Boeing Service Bulletin 747-21A2418, Revision 3, dated December 21, 2004; or Revision 4, dated November 17, 2005.

(1) The repetitive general visual inspections required by paragraph (f)(2) of this AD are terminated for each TADD that is replaced with a new or serviceable, improved TADD.

(2) Replacing all TADDs on one side of the airplane with new or serviceable, improved TADDs terminates all repetitive tests required by paragraph (f)(1) of this AD and all repetitive inspections required by paragraph (f)(2) of this AD only for the side of the airplane on which the improved TADDs are installed.

(3) Replacing all TADDs on both sides of the airplane with new or serviceable, improved TADDs terminates all repetitive tests required by paragraph (f)(1) of this AD and all repetitive inspections required by paragraph (f)(2) of this AD.

### **Previously Accomplished Actions**

(k) Actions done before the effective date of this AD in accordance with Boeing Alert Service Bulletin 747-21A2418, dated November 14, 2002; Revision 1, dated October 16, 2003; Revision 2, dated March 4, 2004; or Boeing Service Bulletin 747-21A2418, Revision 3, dated December 21, 2004; are acceptable for compliance with the corresponding actions required by this AD.

### **Alternative Methods of Compliance (AMOCs)**

(1)(1) The Manager, Seattle Aircraft Certification Office, FAA, has the authority to approve AMOCs for this AD, if requested in accordance with the procedures found in 14 CFR 39.19.

(2) Before using any AMOC approved in accordance with § 39.19 on any airplane to which the AMOC applies, notify the appropriate principal inspector in the FAA Flight Standards Certificate Holding District Office.

## **Material Incorporated by Reference**

(m) You must use Boeing Service Bulletin 747-21A2418, Revision 4, dated November 17, 2005, to perform the actions that are required by this AD, unless the AD specifies otherwise. The Director of the Federal Register approved the incorporation by reference of this document in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Contact Boeing Commercial Airplanes, P.O. Box 3707, Seattle, Washington 98124-2207, for a copy of this service information. You may review copies at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington; or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Renton, Washington, on March 20, 2007.

Ali Bahrami,

Manager, Transport Airplane Directorate, Aircraft Certification Service.

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